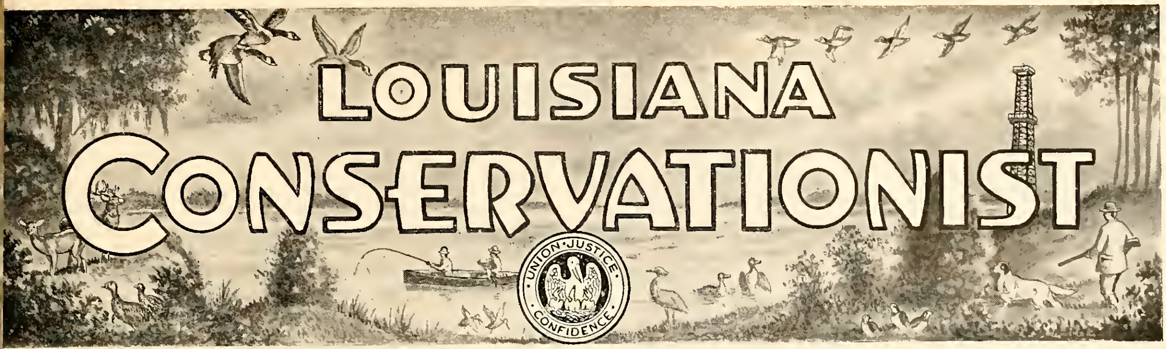

LOUISIANA CONSERVATIONIST

olume 2 JANUARY, 1944 Number 2

Muskrat Prices Remain Frozen Despite Protests

Despite the efforts of Governor am Jones and Conservation Comhissioner Joseph L. McHugh to btain an increase in the prices f fur pelts, the Office of Price dministration has refused an inrease over the ceiling price set y that office, and the ruling, in ffect, continues the "freeze" price et at March, 1942 high levels for ur pelts.

The highest price for muskrat elts in March, 1942 sold by the tate from its game preserves was 1.44¾, which means, if this ruling emains in effect, that the State annot sell any of its muskrats for rices higher than that ceiling.

The Governor and Commissioner IcHugh have endeavored to get his price raised to prevent great ardship among the trappers whose urs are now in storage. These fficials asked for a $2 ceiling rice of fur pelts.

At first, the OPA announced it vould consider the requests from he Governor and Commissioner nd indicated that the ceiling price vould be raised. A few days later, owever, the Government Agency stated that the ceiling on fur pelts could not be raised, and would remain the same as March. 1942, levels.

In the meantime, a large number of fur pelts taken on State Game Preserves are being held in storage pending final outcome of the battle with the OPA. In past years, at least one or two auction sales would have been held by this time to dispose of these pelts, but this year no auction sales by the State have thus far been held while the price controversy continues.

Reasons for Action

The plan for fixing new ceiling prices for certain skins was abandoned, OPA said, for the following reasons:

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INTERSTATE OIL COMPACT COMMISSION TO MEET IN LOUISIANA TWO DAYS, BEGINNING MARCH 31

Muskrat pelts on stretchers hanging out to dry. This is a familiar scene in trapping villages along the South Louisiana coast. At the present time, trappers are engaged in a legal battle with the OPA over ceiling prices for muskrat pelts.

The Interstate Oil Compact Commission will hold its annual Spring meeting in New Orleans on Friday, March 31st and Saturday, April 1st, it was announced by Conservation Commissioner Joseph L. McHugh last week, following his return from Oklahoma City, where he attended a meeting of the executive committee of the Commission.

Commissioner McHugh reported that considerable interest is being taken in the convention to be held in Louisiana and between 200 and 300 prominent people from all parts of the country are expected to attend.

The dates for the convention in New Orleans were fixed by the executive committee of the Interstate Oil Compact Commission, of which Mr. McHugh is a member.

Governor Schoeppel of Kansas, who is chairman of the Commission, will lead a large number of dignitaries to the New Orleans convention. The Interstate Oil Compact Commission has within its membership representatives from all the oil producing states in the nation.

An elaborate program for the two-day meeting in Louisiana is now being arranged, and important national problems are to come up for discussion. One of the most important topics scheduled for consideration at the convention will be post-war allocation of world oil reserves.

As one of the features of the meeting the Conservation Department will schedule an open hearing on a typical Louisiana oil problem, and the visitors will be afforded an opportunity to sit in at the hearing and see how Louisiana handles these matters. The Louisiana hearings on oil problems which provides all interested parties an opportunity to be heard have attracted wide attention.

Recreation, Morale and Efficiency in the War Effort

Recreation ranks along with food, clothing and shelter as an essential and indispensable part of human living. Work efficiency and morale are largely conditioned by rest and vacation periods. In normal times nearly one-half of all travel and a surprisingly large part of our incomes, is spent in recreation. A major part (and the most wholesome and valuable part) of recreation is of the "out-of-doors" variety. Wildlife resources (both plant and animal) play a large part in nearly all out-of-door recreation. Living things make the out-of-doors worth seeing—a place without them such as the moon, would have no "recreation appeal."

One of the major contributions of Conservation to human living is the part it plays in **land planning** and **land-zoning**—in **conditioning** the out-of-doors to meet every human recreational requirement—from a backyard flower garden to a million-acre wilderness tract. Man is so constituted basically (physical and rest requirements), his inherited behavior patterns and instincts are such, that he is unlikely to reach full happiness or emotional and cultural development without regular and intimate contacts with the out-of-doors. If **education is the process of becoming aware of the world about us—what we do to it and what it does to us**, then true understanding of the world and ourselves comes only through ample contact with

(Continued to Page 7, Column 1)

SAM H. JONES
Governor of Louisiana

JOS. L. McHUGH
Conservation Commissioner

LOUISIANA CONSERVATIONIST

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ISAAC D. CHAPMAN
Editor

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Volume 2 **JANUARY, 1944** **Number 2**

VIEWS and COMMENTS BY the COMMISSIONER

Louisiana will be host next March to a most important gathering. The Interstate Oil Compact Commission, composed of representatives of all oil regulatory bodies in the nation, has selected Louisiana for its next convention, upon the invitation of myself and Governor Sam Jones, and the meeting will be held in New Orleans in March. Governor Schoeppel of Kansas, who is chairman of the Commission, and other dignitaries, are expected to attend the convention. Plans are being made for an elaborate program, and one of the features will be an open hearing on a typical Louisiana oil problem.

* * * * * *

Louisiana has made great strides in oil conservation in recent years, and our Louisiana oil laws are considered among the finest in the nation. Our methods of conducting open hearings on all oil problems and giving all interested parties an opportunity to be heard, is an advance step. Many heads of oil regulatory bodies from other states are anxious to see how these hearings are conducted, and among our plans for the convention is to schedule a hearing so that our visitors may see how such things are conducted in Louisiana.

* * * * * *

To what do you attribute the growth of public interest in conservation in late years, was a query directed to us by a newspaperman, recently. Harkening back over our years of interest in such matters it dawned on us that for many years there was little comfort or encouragement to those who realized the value of the resources of wildlife, forestry and water husbandry and who understood something of their profound importance in the development of our civilization. There were voices from the wilderness calling for help and many individuals concerned and anxious to do something about it. But this concern was not enough to do the job. The trouble was that there was no national or even State program designed to rehabilitate and protect wildlife.

* * * * * *

But from these grass root origins, source of most national movements, finally grew organization. In Louisiana the first faltering steps were taken in 1910, when the first conservation commission was set up and interested sportsmen, naturalists, farmers and other conservationists began a meeting of minds and thinking of definite program and continuity of activities. Many were the mistakes, but progress was made, nevertheless, until today Louisiana stands high among the leading conservation states in the nation.

Since 1934 the turn came nationally, and in 1936, with the first North American Wildlife Conference, conservation took a recognized place in national conservation. Now it is not necessary to confine ourselves to national wistfulness. At last we are able to speak of things that have been done. We are on our way, nationally and statewise. And in Louisiana, we are definitely headed on the right road to conservation progress.

LOUISIANA EDITORS' VIEWS ON CONSERVATION

YANKEE MUSKRATS

(From the New Orleans States)

Louisiana's Economic Development Committee thinks of everything. One of the contemplated steps for enhancing the well-being of Louisiana's 2,200,000 people is improvement of the marsh muskrat. The committee is toying with the idea of importing some of the North's larger and stronger muskrats and cross-breeding them with the native animals, it is learned from the December issue of the Louisiana Conservationist.

The expected biologic result would be an aquatic rodent yielding more and better fur.

By all means, bring some of those Yankee 'rats down and set them up in housekeeping with Mr. or Mrs. Castor Zibethicus of Louisiana. They might like it down here; might thrive and multiply; might learn our ways and begin saying you-all. Any person who can make two fur coats grow where but one grew before will truly be a benefactor of the human race. There would be another advantage. Since the muskrat has become a table delicacy as well as a provider of fine raiment, the larger the animal the more meat in the pot.

And of course the industry now based upon marshy areas that are more or less waste and useless and yielding as high as $6,000,000 a year in pelts, might be made to produce $10,000,000 or more of the larger, stronger furs. This would add to the income of our several thousand trappers and it would find its way into wholesale and retail trade channels, to the benefit of everybody.

We are glad to note that the Louisiana Economic Development Committee is watching every opportunity to provide the more abundant life for us all.

A NEW HARVEST

(From the New Orleans Item)

Our trapping season opened yesterday, a notable event in its furbearing implication of harvesting millions of dollars from our marshes. But in addition, this year there will be a new tide of dollars, for the ration book is about to breach ramparts of prejudice before which logic and reason have hitherto fallen back defeated.

The flesh of muskrats is both nutritious and palatable. Many gourmets have relished its fine flavor for years. A strict vegetarian and one of the most cleanly of all our wild animals, the muskrat has been scorned solely because of that last syllable of its name; "rat" has a connotation which, however undeserved in this instance, too many of us could not bring ourselves to ignore.

Thus, year after year, millions of perfectly edible muskrats were tossed into the marsh after being stripped of their pelts, given to crab fishermen for bait, or otherwise disposed of just as wastefully. This year bids fair to exceed last season's take of 4,000,000 pelts; but the meat will not be wasted. As "marsh hare" the stripped carcasses will be sold to northern buyers for the food markets, and once the ancient prejudice is overthrown, an additional, highly valuable crop will have been established for our marshlands.

Of America's commercial forest area of nearly 462 million acres, 74 per cent is privately owned; 21 per cent is owned by the Federal government; and 5 per cent by states and municipalities.

American Musk From Muskrats Used In Perfume Manufacture

To America now belongs the stinction of having the world's rgest potential musk supply. The erfume industry of this, as of her countries, has for many ears used animal fixatives, musk om the muskdeer of Tibet and hina, civet from Abyssinia's civet t, castoreum from the beaver Siberia and Northern Canada, nd finally that rarest of them l, ambergris from the sperm hale.

From a quantitative and value andpoint, musk and civet have een the most important animal xatives. At various times other nimals have been suggested as urces of musk, including the usk-ox, the muskrat and the wly skunk. It is abundantly vident from the literature of the erfume industry that none of ese last-named fixative sources ver achieved a status beyond that f museum or laboratory curisities.

In 1942 the first announcement as made of the efficient producon of musk from the American uskrat. The story was released multaneously by Louisiana State nd Yale University, where Dr. L. E. Erickson and Dr. Philip . Stevens had isolated from the cent glands of the Louisiana uskrat, a mixture of macrocyclic lcohols and ketones, related hemically to the compounds upon hich the value of musk from the uskdeer and civet depends.

Second in importance only to e recognition of the chemical haracter of the odoriferous comonents of muskrat musk was the evelopment of the chemical proess whereby the commercial value f the naturally occurring musk ubstances was increased almost fty times.

When the musk-like bodies had een concentrated and isolated rom the musk glands, it was ound that about 98% of them onsisted of so-called musk alcools and only 2% of musk keones. Only the latter possess the esired odor and fixative qualities, ut it was found possible to oxiize in excellent yield all of the usk alcohols to musk ketones, hus utilizing the potentialities of he natural material in a way that ould not be achieved by merely aking a tincture of the gland ontents.

Because the musk-like bodies ere found to possess a ring tructure containing respectively ifteen and seventeen carbon toms, they were designated cylopentadecanol and cycloheptaecanol for the musk alcohols, and cyclopentadecanone and cycloheptadecanone for the musk ketones. As stated, only the ketones are valuable perfume raw materials.

The relationship between these chemical bodies and the odoriferous principles of muskdeer musk and civet becomes evident from the fact that the latter are chemically known as 3-methyl cyclopentadecanone (muscone) and cycloheptadecanone (civetone).

Because the two musks of the muskrat partake both of the chemical and the odor character of their muskdeer and civet analogs, alternate and more convenient chemical names suggest themselves for the former. Accordingly, cyclopentadecanone (because it contains one methyl group less than muscone) is also called "nor-musone," while cycloheptadecanone (because it contains two hydrogen atoms more than the unsaturated civetone) is also called "dihydrocivetone."

Editor's Note:—This article was prepared by the editorial staff of Givaudan-Delawanna, Inc., in collaboration with Dr. J. L. E. Erickson, associate professor of Chemistry at Louisiana State University, and Dr. Philip G. Stevens, Instructor of Chemistry at Yale University.

This article was published in the December, 1943, issues of the American Perfumer and Essential Oil Review and the Givaudanian, both of which periodicals are published in New York.

Permission for republication of this article in the Conservationist has been obtained from the authors.

Further on, in this article, we will come back to some of the remarkable chemistry of these compounds. For the present, it will prove interesting to discuss the place of this discovery in the history of musk-like fixatives.

While the very name "muskrat" seems to imply that the animal produces musk, previous efforts in the direction of the isolation of the musk from this rodent appear to have produced discouraging results. This is no doubt due to the fact that 98% of the potential musk in the natural secretion of the muskrat is in the odoriferously uninteresting musk alcohol state—a fact not known before.

This Louisiana trapper is storing the musk glands of the muskrat so that thereafter the musk may be manufactured into perfumes. Details of this work is described in the article on this page.

As a result any ordinary extracts of the scent glands of the muskrat were bound to depend upon the 2% of ketones naturally present in the secretion.

Unless the musk alcohols are first concentrated and freed from inert impurities, and then oxidized to the ketone form, the product which one can obtain by extraction of the scent glands of muskrats is doomed to be a relatively weak and ineffective tincture. Furthermore, since only about 2% of the potential effective concentration of odoriferous substances is utilized—and since the collection, shipping and extraction is expensive in any case—any muskrat musk tinctures which might be offered would cost far more than they are worth. Therefore, they would not be successful in a business way.

H. Stanley Redgrove,[1] in 1930, reviewed the three popular fixatives, musk, civet and castoreum. He recalled the fact that ordinary Chinese or Tonquin musk consists of the dried secretion from the preputial follicle of the muskdeer; that Walbaum in 1906 succeeded in isolating a ketone from this musk which was its main odoriferous constituent, and that this ketone, muscone, was later characterized by Ruzicka and associates as 3-methyl cyclopentadecanone, which they subsequently duplicated by synthesis.

Civetone Isolated in 1912

Civet, a glandular secretion of the civet cat of Abyssinia, contains in addition to skatole (beta-methyl indole) about 3% of a ketone, civetone, first isolated by Sack in 1912. Civetone was characterized by Ruzicka as 9-cycle heptadecanone. Redgrove failed to call attention to Ruzicka's discovery (U. S. Patent 1,720,748, July 1929) that the yield of civetone from natural civet can be increased by oxidizing the civetol, also found in civet, to additional civetone.

That a secondary alcohol could be oxidized to a ketone was a fact well known many decades before Ruzicka's time. However, this well known fact was of no practical benefit to the civet business until Ruzicka, after careful study, discovered that the secondary alcohol, civetol, did occur in civet, but that it possessed no odor of practical interest to a perfumer. However, upon oxidation, it could be made to yield the ketone, thus increasing the quantity of civetone obtainable from civet.

Findings Unexpected

The identification of dihydrocivetol and nor-muscol in the oil of muskrat scent glands was achieved by Dr. Stevens and Dr. Erickson only after much effort, thus requiring an equal amount of inventive genius. It should be pointed out, in this connection, that the joint occurrence of musk alcohols and ketones in animal scent glands, in a proportion where the alcohol predominates, is unexpected. In fact, muscone is by far the predominating musk-like constituent in the musk of musk deer and it has never been established that the corresponding alcohol, muscol, is present at all. In fact, there is evidence to the contrary.

The odoriferous constituents of castoreum seem to be quite dif-

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« SUGGESTED MUSKRAT MEAT RECIPES »

By Herbert L. Dozier,
Director, United States Fur Animal Field Station—Fur Resources Division of Wildlife Research —U. S. Fish and Wildlife Service

Because of the scarcity of other meats, Americans are eating more poultry and domestic rabbit. Some will try muskrat, or "marsh rabbit," as it is sometimes called. Muskrat was highly esteemed, especially in winter, by the aborigines of North America. The voyageurs, trappers, and hunters roasted it over the coals of the camp fire, and traders and Indians dried the meat for winter food.

In modern times many persons also have eaten the flesh of the muskrat and relished it. Some have declared that it is game worthy of an epicure and has a flavor somewhat like that of the wild duck shot in the same marsh in which the muskrat fed. Its flavor has likewise been likened to that of the famous terrapin of Chesapeake Bay. The muskrat is mainly a vegetarian and feeds on the roots and stems of such equatic plants as cattails, sedges, bulrushes, wild-rice, pond lilies, and waterweed.

Fresh muskrat meat is available during the open trapping seasons in various states. Muskrats are sold extensively in some of the markets of the East. In Washington, Baltimore, St. Louis, Wilmington, and Philadelphia, they are sold as "marsh rabbits," but no attempt is made to conceal the fact that they are muskrats. They can be purchased cheaply as they are trapped for their fur and the additional labor of preparing the meat for market is slight.

Muskrat is eaten by all classes of people. It is a favorite dish at dinners given by church societies in Delaware, Maryland, and New Jersey, and an annual muskrat banquet is a fixture with certain gun clubs in both the East and the West.

* * *

GENERAL DIRECTIONS FOR DRESSING AND COOKING

The flesh of the muskrat, dark red in color, is fine-grained and tender. Perjudice against the meat results usually from lack of skill in cooking or from carelessness in skinning the animal. The musk glands often come off with the skin, and only in summer does the musky odor pervade the flesh. Care should be taken to avoid cutting into the musk glands, and any subcutaneous glands that may adhere to the meat should be trimmed off.

The dressed muskrat should be soaked overnight in slightly salted cold water to draw out the blood and reduce the gamy flavor. Weak vinegar also reduces the "wild" taste and tends to make the meat more tender. A pinch of baking soda may be used for the same purpose.

Young muskrats, like young rabbits, can be cooked by the quick methods of frying or boiling. Older animals require longer, slower cooking. The latter are excellent served in fricassees, casserole dishes, muskrat pies, croquettes, chop suey, and other ways adapted to mature meat.

* * *

RECIPES

The recipes given here are typical of the many suitable for cooking this meat. When properly prepared, it is highly palatable.

Fried Muskrat

Disjoint the muskrat and cut it into desired number of pieces. Parboil for 20 minutes, drain, and wipe with damp cloth. Fry plain in a heavy skillet. If preferred, the pieces may be dipped until well-coated in a smooth batter made by beating one egg yolk in half a cup of milk, adding three-fourths of a teaspoonful of salt, and stirring in half a cup of flour, and dropped into hot fat. As soon as the meat is browned, reduce the heat and cook slowly until tender. Serve on a hot platter and garnish with parsley. A rich, brown gravy may be made by stirring flour into the pan drippings, adding a little water or milk, and cooking until thickened.

Broiled Marsh Rabbit

Clean and wash the muskrat and wipe it with a damp cloth. Butter thoroughly and brush with a thin mixture of vinegar and mustard. Dust well with prepared poultry seasoning, place in broiler, and broil for 20 minutes.

Smothered Muskrat

After soaking the muskrat overnight, drain and parboil for 20 minutes. Heat some sausage or bacon drippings in a thick skillet and sear meat in it. Season with salt, pepper, and chopped onion. Sprinkle with flour and add a little water. Then cover and allow it to simmer until thoroughly done.

Maryland Potted or Baked Muskrat

Soak 2 muskrats overnight, drain, and cut into pieces. Pour boiling water over meat, stir thoroughly, and drain. Place in a thick skillet or iron pot, add a little water, a pod of red pepper or half a teaspoonful of red cayenne. Season with salt and pepper to taste, a little sage and 4 tablespoonfuls of bacon or sausage drippings. If desired, a generous piece of washed salt pork may be used instead. Sprinkle flour over top, cover, and bake in a moderately hot oven until tender, basting several times until well browned.

Enough potatoes for the meal may be cooked with the meat, or the muskrat can be served with diced, buttered white or sweet potatoes, peas, or carrots.

Michigan Special

After soaking the muskrat overnight, disjoint it and cut it into pieces. Put it into fresh water and parboil for 5 minutes. Drain and rinse with warm water. Place in a roaster and cover with canned corn and a little water or milk, using 2 cans of corn to 3 muskrats. Add salt and pepper, 3 medium-sized onions, and 2 tablespoonfuls of butter. Place in a hot oven and stir the pieces as they brown. Bake about 2½ hours, or until the meat is well done.

Layered Muskrat and Corn

Soak muskrat overnight in slightly salted water. Drain and parboil for 20 minutes in fresh water seasoned with a little celery, onions, salt, and pepper. Separate the meat from the bones and place it in a casserole. Layer it with canned crushed corn (a layer of corn and then a layer of meat), topping off with the corn. Add a little milk, place in oven, and bake until well done and properly browned on top.

Pickled Muskrat

Place muskrat in a crock or glass jar containing a solution of a cup of water, a cup of cider vinegar, a tablespoonful of salt, mixed spices, and bay leaves. Let stand in a cold place for at least 24, and preferably 48, hours. Then simmer in the same mixture until tender. Remove meat, strain off the spices and bay leaves, and thicken the liquid with flour and water to the desired consistency.

This dish is best served with potato dumplings. To make the dumplings, fry a medium-sized onion in 2 tablespoons of fat, then pour this over 4 cups of diced bread, and mix by hand. Add a cup of mashed potatoes and mix thoroughly, then 2 raw eggs, half a cup of flour, and salt to taste. Fashion into large balls, drop into boiling water in an uncovered pot or kettle, and cook for 20 minutes. Serve with brown gravy.

Muskrat Pie

Soak muskrat overnight in slightly salted water. Drain, wipe the meat with a damp cloth, and cut into two or three pieces. Place in a kettle, barely cover it with water, add a little salt, and let simmer 1 to 2 hours until the meat is tender. Pour off and measure the broth. Remove the meat from the bones in large pieces. Chop up an onion, a green pepper, and a half a cup of parsley, and put in a skillet with several tablespoonfuls of butter or other fat. Cook for a few minutes, stirring frequently. For each cup of broth, take 1½ tablespoonfuls of flour and mix well with the fat and seasonings. Pour in the broth and stir until thickened. Salt to taste and add a dash of tabasco sauce. Mix in the meat well and place in individual baking dishes. Cover with pastry and bake in a moderate oven until the crust is a golden brown.

Muskrat With Tomato Sauce

Disjoint and cut into pieces 2 muskrats. Place in a deep pan, cover well with water, add ½ teaspoonful of black pepper, a pinch of salt, and 1 sliced onion, and cook about an hour, or until thoroughly tender. Melt half a cup of fat in a thick skillet. Place meat in the hot skillet, brown on one side, turn, and immediately pour over it about two-thirds of a small-sized bottle of catsup and a teaspoonful of Worcestershire sauce. If desired, the pieces of onion saved from the first water and a small piece of celery may be added. Almost cover with water and let simmer until the gravy is thick enough to serve.

Preserving Muskrat Meat

During the trapping season the wives of trappers and farmers living on or near marsh areas where muskrats are produced preserve the meat for later use. This is done by ordinary home-preserving methods. A favorite way is to parboil the meat, fry it lightly, and then pack it tightly in glass or earthen jars. Melted fat should then be poured over it until it covers the meat about one-quarter of an inch, in the same manner as country sausage is commonly preserved.

The quick-freezing method and the locker service furnished by ice and refrigerating companies have made it possible to develop still further the preservation of muskrat meat. The usual procedure is to blanch or lightly parboil the meat, wrap it in special waxed paper, and then quick-freeze it.

LOUISIANA FUR QUIZ

Numerous inquiries are received every day by the Conservation Department regarding information about Louisiana's huge fur trapping industry. Armand P. Daspit, Director of the Fur and Wildlife Refuge Division, has selected thirty of the most frequently asked questions about the fur trapping industry and has supplied the correct answers for them. This question and answer quiz has been prepared by Mr. Daspit at the request of the CONSERVATIONIST, and is presented herewith. See how many of the correct answers you knew before:

1. Q. Which is the largest muskrat producing state in the Union?

A. LOUISIANA.

2. Q. What state produces more muskrats than all the other states combined?

A. LOUISIANA.

3. Q. What is the normal muskrat take in Louisiana?

A. About 6,000,000 pelts.

4. Q. What is the normal value of the fur crop in Louisiana?

A. Between $7,000,000 and $8,000,000 per year.

5. Q. How many trappers are engaged in the trapping industry in Louisiana?

A. From 12,000 to 15,000 licensed trappers.

6. Q. How many people are dependent on the Louisiana fur crop for an existence?

A. 30,000 to 40,000 people are dependent on the fur industry in Louisiana.

7. Q. How many traps are trappers legally permitted to set daily?

A. 250 traps, which must be visited each day.

8. Q. What is the legal distance that trappers must set their traps from a muskrat house?

A. Ten feet.

9. Q. What is the reason for setting traps so far away from the muskrat houses?

A. To keep from catching the mice, which are the breeding stock for the next season.

0. Q. For what other purpose besides the pelt is the muskrat of economic value?

A. For their meat and their musk.

11. Q. For what purpose is the musk of the muskrat used?

A. In the manufacture of valuable perfumes.

12. Q. What are the methods for taking fur animals in Louisiana?

A. Trapping only. Shot furs are prohibited by law.

13. Q. Does a trapping license permit the trapper to hunt?

A. No. The trapper will have to secure a hunting license.

14. Q. Which is the most valuable individual fur pelt in Louisiana today?

A. The otter.

15. Q. How many otters are legally taken in Louisiana per year?

A. About 2,000.

16. Q. How many fur dealers are there in Louisiana?

A. About 40 dealers.

17. Q. How many fur buyers are there in Louisiana?

A. From 300 to 400 licensed fur buyers.

18. Q. Who is a fur buyer in Louisiana?

A. A fur buyer is a person who visits the marshes and buys furs from the trappers for the dealer. In other words a fur buyer is a clerk for the dealer on the outside of the store.

19. Q. How are furs paid for by the buyer?

A. In cash. The buyer usually has from $3,000 to $5,000 in his pocket at all times.

20. Q. Is it not a dangerous matter for a buyer to have that much money in his pocket at any one time?

A. NO. There is not a single case on record where a buyer has been robbed by a trapper.

21. Q. What are muskrat pelts used for?

A. In the manufacture of ladies' garments.

22. Q. How many types of coats are made from a muskrat pelt?

A. Three types. The muskrat pelt is cut into three portions. The backs are used in the manufacture of the black coats; the sides, in the manufacture of the golden coats and the bellies, in manufacture of the silver coats. No part of the muskrat pelt is wasted.

23. Q. On what does the muskrat feed?

A. On grass roots, etc. They are strictly vegetarians.

24. Q. Where are Louisiana muskrats found?

A. In the Louisiana marshes from the Mississippi line to the Texas line.

25. Q. What are the principal muskrat producing parishes?

A. St. Tammany, Orleans, Jefferson, St. Charles, Lafourche, Terrebonne, St. Mary, Iberia, Vermilion, Cameron and Calcasieu.

26. Q. What is the price of a trapping license in Louisiana?

A. Two dollars, and the license must be secured from the sheriff of the parish in which the trapper traps.

27. Q. What other pelts are taken in Louisiana besides muskrat?

A. Otter, raccoon, mink, opossum, skunk, civet cat, fox, weasel, etc.

28. Q. About how many fur pelts are taken from the State's game preserves?

A. From 250,000 to 300,000 pelts per year.

29. Q. What is the value of the fur taken from the State's game preserves?

A. Approximately $325,000 per year, of which the trappers receive 65%, and the Department of Conservation 35%.

30. Q. Why is such extensive trapping permitted on the States game preserves?

A. In order to destroy predatory animals that are detrimental to wildlife.

Big Sturgeon Captured in Trawl Near Grand Isle

A sturgeon eight feet two inches in length and weighing an estimated 285 pounds was captured in a trawl by Ellis Brus and thirteen year old Andrew Belliot of the shrimp boat "Sea Ranger" five miles off Grand Isle during the first week of November. The specimen, examined by Edouard Morgan and William Werlla of the Department of Conservation, was found to have deteriorated so that it was no longer useful for food.

James Nelson Gowanloch, Chief Biologist of the Department, stated that the fish was a specimen of the Lake Sturgeon (Acipenser fulvescens) one of the seven North American species of sturgeons. This fish ranges all the way from Hudson Bay in Canada to the lower Mississippi Valley. It does not usually enter the ocean. Although lake sturgeon weighing 100 pounds are caught, the average run taken by fishermen is about ten pounds. A six-footer would be considered a large fish but there are reports of specimens reaching the length of nine feet. This specimen therefore is an exceptionally large individual with a correspondingly high weight.

Sturgeons are strange, interesting and ancient fish. Like adult paddlefish, sturgeons have no teeth although they feed upon a wide variety of materials including small shellfish, crawfish, insect larva, worms and even, in the neighborhood of grain elevators, corn and wheat. Armored with solid side plates and provided with peculiar mouths they may well be called living fossils since their ancestry runs back to the early times of fish life on the earth. Sturgeons are bottom feeders. They cruise slowly along with odd pendant barbels hanging down at the exactly appropriate distance in front of their mouths. When the barbels signal "Food" the sturgeon promptly shoots its tubular, protractile mouth and thus secures a meal without the trouble of stopping its forward motion. Sturgeons are not common fish in Louisiana although records exist for both fresh water and salt water species.

Sturgeons are famous the world over for the fact that their eggs when preserved with salt become caviar, a valuable product of commerce. Some sturgeons may attain enormous sizes. The common sturgeon of the Atlantic Coast has been taken with a length of eighteen feet.

A sturgeon's flesh is highly prized, particularly when it has been smoked.

Here is the 285 sturgeon, measuring eight feet, two inches in length, which was caught near Grand Isle early in November.

American Musk From Muskrats Used for Perfume

(Continued from Page 1)

ferent and consist largely of aromatic compounds as shown by Walbaum and Rosental,[2] and also St. Pfau,[3] who isolated among other compounds acetophenone, benzyl alcohol, and various phenols, but no large ring compounds. Dr. Stevens has made a further study of castoreum, and his paper will appear shortly in the Journal of the American Chemical Society.

Redgrove, in his 1930 article, had this to say about a product from the muskrat:

"The musquash or muskrat, Ondatra zibethica (Fiber zibethicus), an animal allied to the British vole and pretty widely distributed in America, is also provided with glands which secrete highly odorous material, these being attached to the sexual organs of both males and females.

"The animals are trapped for their fur; but it would seem that until recently no serious attempt has been made to utilize their perfume material. I am, however, informed by their selling agents, Maxwell, Plaistowe & Co., Ltd., by whose courtesy I have been enabled to examine a small sample of the new product, that the Hudson Bay Company is instructing their trappers regarding the collection of the glands of the animal.

Yellowish Oil Described

"An oil has been prepared from these by extraction with petroleum. It is yellowish in color, apparently contains some fatty material, and readily solidifies on cooling, e.g. in cold weather. It has an overlaying odor of petroleum, which can, of course, be removed, though a product free from this drawback would be preferable. The oil is soluble in ether, glycerol, and, to a very limited extent, in alcohol. Its odor is very powerful, but seems to lack persistency.

"A dilute tincture has a pleasing fragrance of a somewhat civet-like character, not altogether unlike that of a mixture of civet and musk xylene in dilute solution. Civet and musk are often used in conjunction, and the muskrat perfume, therefore, may prove very useful in certain combinations. A minute trace of the oil, for example, much improves the odor of rose-geranium oil, though, of course, many elaborate tests must be carried out to determine its value as a perfume material."

The only more recent scientific article about muskrat musk was written by Simmons and Hills[4] in 1933, reporting on analytical constants of an oil from the scent glands of the muskrat. The mean molecular equivalent of the solid acids indicated the presence of unsaturated acids of high molecular weight. The unsaponifiable matter, insoluble in 90% alcohol, had a very high iodine value.

This was about the extent of the work directly relating to muskrat secretion until May, 1941, when an article appeared about the experiments of Charles V. Sparhawk, essential oil dealer of Sparkill, N. Y. This article,[5] while contributing nothing to the chemistry of muskrat musk, presented quite a bit of interesting natural history and information regarding the geographic spread of the animal's American habitat.

Sparhawk's musk glands came from animals trapped in the Blackwater refuge which occupies an area of approximately 5,000 acres of marshland on the Eastern shore of Maryland, in Dorchester County. This is one of several refuges established by the government to give protection to migratory waterfowl and to conserve wild life generally.

Trappers hired by the government are permitted to trap muskrats at a time when the superintendent of the refuge decides that the animal population needs a bit of thinning and when the quality of the fur is at its best. The trappers are paid on a piece work basis, the animal's fur being the trapper's almost exclusive object.

The muskrat has brown fur, a long tail, webbed feet, and swims very well. It is almost nocturnal in habits and stays in its burrows during the day time, especially in hot weather. It builds houses like hay-cocks for its young. It has litters of from one to six young ones, from two to four times a year.

Of the ten to twenty million muskrat skins obtained annually in the United States, Louisiana is understood to contribute from 5 to 10 million. The fur sells for an average of $1 a pelt, although much higher prices are paid for some grades. Aside from Louisiana and Maryland, areas bounding in muskrats are parts of Texas, the Great Lakes section of New York state, the Mississippi basin, and parts of the Pacific coast.

Whereas in the Blackwater refuge the government controls the trapping operations and sells the furs, in Louisiana from 70 to 80% of the trapping lands are owned by a number of individuals or companies. The trapping area is some four million acres of marshland scattered from the Mississippi boundary to the Texas boundary line along the Gulf coast.

Trapping in Louisiana is done almost entirely on a percentage basis. The land owner receives 35% of the catch, while the trapper's share amounts to 65%. The various trapping domains are operated on behalf of the owners by superintendents. Trappers are subject to control by these overseers. They make their rounds through the marshes, periodically picking up fur and supervising the operations. One trip may involve as much as a week, depending upon the area to be covered.

Dr. Erickson, through his connection with Louisiana State University, had an excellent opportunity to study the conditions of muskrat trapping at first hand. He learned that a good trapper will take from 2,000 to 3,000 muskrats during the trapping season (70 days). Naturally, until the value of these glands was established, the trappers discarded them.

How to collect and keep the glands was somewhat of a problem. It had to be made easy for the trappers. In the beginning, the practice was for the glands to be collected in one-gallon "varnish" cans, half filled with ethyl or isopropyl alcohol. After collection, contents could be transferred to 55-gallon drums for long-distance shipment.

Through the cooperation of the Louisiana Conservation Department, Dr. Erickson was able to secure large quantities of these glands for experimental purposes.

3 Ounces from 800 Glands

It takes 800 to 1,000 musk glands to produce 10 ounces of crude extract. This, in turn, yields about 3 ounces of a neutral musk oil, which contains about one ounce of macrocyclic compounds, consisting of 98% of musk alcohols and 2% of musk ketones. These are removed by vacuum distillation, and the entire mixture is then oxidized to a like weight of the corresponding ketones which have the characteristic musk odor.

The average weight of the male muskrat scent gland is about 1.5 grams. The glands of the females, even the adult ones, are very small, averaging only about one-quarter the weight of the male glands. It usually does not pay to keep them.

The laboratory procedure for obtaining the musk of the muskrat is outlined in the Journal of the American Chemical Society[6]:

The glands which had a characteristic, not unpleasant, musky odor, were drained from the alcohol, washed with ether, and ground up in a meat chopper. The ground glands were extracted with ether in a Soxhlet extractor, and the extract, the preserving alcohol, the wash ether, and the expressed juices were combined and evaporated.

The concentrated product (crude extracted musk) was saponified with 10% potassium hydroxide in boiling alcohol. After pouring into a large volume of water, the products were separated into acid and neutral fractions by extraction with ether. The ether extract, on evaporation, gave a neutral musk oil of fine fragrance. Distillation of this material at 1 mm. pressure yielded a light yellow oil, boiling point 130-170°, which solidified to a waxy substance with a fine musk odor.

The neutral distilled musk forms no appreciable amounts of semicarbazone, showing it to contain very little free ketones. Failure to take up any bromine indicates a saturated substance. The optical activity was slight.

Alcohols Are Oxidized

On vacuum fractionation the mixture could be resolved into about 58% dihydrocivetol (C 17), about 40% nor-muscol (C 15) and about 2% of the corresponding ketones. Chromic acid oxidation converted the two musk alcohols to their ketones. These were characterized by their semicarbazones and other derivatives of known melting points.

Oxidation of the musk carbinols was carried out with chromic acid. The resulting ketones were purified by conversion to the semicarbazones, regeneration of the ketones, and recrystallization of the latter.

In producing commercial musk from muskrat glands, virtually the same procedure would be followed, except that it may not be necessary to separate the musk alcohols. They can be converted, as they are found the naturally occurring mixture, to the corresponding mixture of ketones. Thus it would seem desirable to produce a highly refined animal musk, which is obtained by a process which removes the fats and fatty acids contained in the natural product, and which has the advantages of uniformity and ease of employment in perfumery.

Ruzicka's Work Cited

No account of the macrocyclic musks could be complete without a reference to the monumental work done in this field by Ruzicka.

(Continued to Page 8, Column 3)

uskrat Prices emain Frozen espite Protests

(Continued from Page 1)

Lack of agreement within the dustry itself as to practical ethods for establishing new ceilgs, complex difficulties which ose in connection with the maintenance of normal trade practices d channels of distribution, beuse of the delay resulting from e efforts to solve these probms, the issuance of a new regution in the middle of raw fur ason might seriously disrupt e market.

Careful scrutiny of market contions since the announcement of e plan to establish dollar-andnt prices for a top quality skin, PA said, indicated that because the difficulties in establishing forceable gradings, and the conquent problem of enforcing differential pricing for inferior ades of skins, such action might sult in a substantial increase in e general level of raw skin ices. This, OPA said, would nessitate a break-through in the iling prices of fur garments hich would be inconsistent with resident Roosevelt's "hold-thene" order.

ECREATION, MORALE ND EFFICIENCY IN HE WAR EFFORT

(Continued from Page 1)

il, water and living things. Man n hardly be expected to underand himself until he knows someing of the two million other species of creatures found on this arth. He can hardly pass a harmonious existence with his neighors without doing "a bit of Conervation living"—without an ecogical understanding of the interelatedness of out-of-door events hich **condition** his entire life.

Naturalists and fishermen seldom turn-up" in penal institutions. ut of door experience serves as conditioner—a balance wheel or tabilizer—which may well be the o. 1 influence in minimizing crime nd other social problems. As a holesome and stimulating outlet or spare time it reconditions tired bodies and jangled nerves" —keeping idle hands out of mishief. Depressions and unemployment are less of a calamity since hey bring more opportunity to do hat which is close to the heart.

Time spent in the out-of-doors eads to morale essential to good ving and good work—in peaceime or wartime. Men "without verything" come to acquire a **sense of belonging**" when in the out-of-doors—of feeling they are a minor but important part in a panorama of nature's events. It provides a necessary "escape." Plants and animals become **friends** —constant and always the same— with them man is fortified when the human variety turns false. In nature man keeps on "believing in" things.

Out-of-door living gives to men who have no wordly tangible possessions **"the pride of possession"** —the feeling that the soil they tread is theirs—that they have **something to fight for** and to live for. Patriotism springs from the soil—it is not bred in city slums. The Russian peasant may not "own" an acre of land, but his proximity to the soil keeps his morale high and makes him one of the best fighters in the world. Cynicism and "the world owes me a living" never originate in "the wide open spaces." **The out-of-doors with all its natural resources constitute a major part of what we have to live and fight for.** Hence, contact with the soil through out-of-door experience is closely linked with "the will to defend," the maintenance of morale (happiness), and sufficient concern for the future to live a "creative life" full of service rather than indulgence.

Rest periods are vital to war production. This is stressed by the War Department, the Navy Department, the War Manpower Commission, the War Production Board and several other government agencies in recommendations to war contractors. The British found early in the war that the "law of diminishing returns" began to operate somewhere in the neighborhood of 60 hours per week. Above this point little increased production, but frequent accidents resulted. This critical point varies with the incentive, and with how the work is interspersed with periods of rest and play.

The evidence is conclusive that, other factors constant, workers "recuperate" more rapidly and build a greater reserve of physical and nervous energy where a large part of their recreational time is spent in the out-of-doors. Thus they work more efficiently and do more for the war effort—another contribution of Conservation. We have good reason to believe that even in wartime, it is a good investment of both time and a reasonable amount of travel-miles, to hunt and fish, to hike and swim, to camp or explore and enjoy Nature's playground.

Among all American industries, those of the forest stand high as creators of national wealth.

FOREST FIRE FIGHTERS ORGANIZE

It is a far cry from the days when the belief was almost general that burning the woods was harmless, if not actually essential, to this day when groups of farmers, stockmen, laborers, everywhere, are organizing themselves into units of the Forest Fire Fighters service, an organization whose members are pledged to use extreme care, if need be, to prevent fire from getting out of control when its use becomes necessary on their lands, but also to volunteer their services in fighting forest fires that may be burning in the community where these FFFS members live.

Pictured above is a group of nine farmers who stand before Forest Ranger Evan DeMoss of Plain Dealing, Louisiana, and with uplifted hands, take the Forest Fire Fighters pledge. Reading from left to right, these men are: Ralph King, Sarepta, La.; J. H. Smith, Sarepta, La.; Andy C. Mayfield, Shongaloo, La.; C. S. Butts, Shongaloo; W. L. Allison, Shongaloo; T. O. Giles, Cotton Valley, La.; W. B. McDuffy, Cotton Valley, La.; B. F. Glasgow, Taylor, Ark.; John Butler, Taylor, Ark.; Ranger De Moss of the Louisiana Division of Forestry, stands in front of the group, administering the FFFS pledge.

The FFFS is a unit of the office of Civilian Defense, and in Louisiana, is being organized under the direction of State Forester Massey H. Anderson, New Orleans.

Farmers and others who are interested in setting up a local unit of this nation-wide war-time agency, are requested to get in touch with their nearest Forest Ranager, or with State Forester Anderson, or with H. L. McKnight, Benton, La., Educational Supervisor, Division of Forestry.

SLEET AND ICE STORM DOES MUCH DAMAGE TO TIMBER IN NORTH LA.

The sleet and ice storm in Central and North Louisiana about ten days ago caused thousands of dollars damage to young timber and to fire protection communications system of the Conservation Department's Forestry Division, according to Massey H. Anderson, State Forester.

Anderson estimated that in excess of 25,000 acres of young pine and hardwood were broken down and limbs of mature trees snapped at the bole of the tree.

Shade trees also suffered greatly and owners of damaged trees are advised to trim broken limbs and paint the exposed ends of the stump.

Anderson expressed the hope that a large percentage of the damaged trees will survive and with continued good weather the number of damaged trees surviving will increase.

The communications system of the Forestry Division suffered damage estimated at between $2,500 and $3,000. Over 500 breaks in the telephone lines in DeSoto and Natchitoches parishes alone were reported.

The Forestry Division has put most of the lines back into service but it will be at least six weeks before the system is again functioning normally, according to Forester Anderson.

TYPES OF VIOLATIONS WHICH WERE MADE DURING DECEMBER, 1943

Possessing Undersize Game Fish	2
Using Illegal Tackle to Catch Game Fish	5
Possessing Undersize Commercial Fish	2
Hunting Without License	10
Hunting at Night	7
Hunting With Unplugged Gun	3
Hunting Migratory Waterfowl Before Sunrise or After Sunset	2
Hunting on State Preserves	12
Hunting and Killing Doe Deer	9
Trapping Without License	1
Trapping Out of Season	3
Killing Fur Bearing Animals With Gun	6
Trapping on State Preserves	1
Total	63

PARISHES IN WHICH VIOLATIONS OCCURRED AND ARRESTS MADE IN DECEMBER, 1943

Assumption	1
Avoyelles	2
Catahoula	1
Concordia	2
Evangeline	1
Jackson	2
Jefferson	6
Madison	21
Natchitoches	2
Orleans	3
St. Bernard	3
St. Tammany	2
Tangipahoa	4
Tensas	9
Pointe Coupee	2
Vermilion	1
Vernon	1
Total	63

AGENTS PARTICIPATING IN DECEMBER, 1943 ARRESTS

J. W. Bates, Angelo Benandi, Levert H. Bird, John Busalacchi, Sam J. Chaze, Mark B. Cooper, Less Davis, R. A. Davis. J. Marvin Fallin, D. L. Farrar, T. H. Forman, Jr., Jno. W. Gilbert, Nathan Guillory, Allen Hawsey, Lesma Hebert, Clarence Hood, Robert D. Landry, B. P. LeBlanc, Jos. C. LeBlanc, J. O. Mayeux, Sam Nunez, Chas. J. Olano, W. J. Plattsmier, P. S. Reardon, Lawrence Sintes, T. W. Stewart, Willie Stutson, Allen D. Swayze, Frank Trocchiano, L. C. Weaver.

FORMER GOVERNOR'S WIDOW PASSES AWAY

Mrs. Louise P. Simpson, widow of the late Governor O. H. Simpson, died January 20th, at her home in New Orleans, following an illness of several weeks. Mrs. Simpson had been connected with the Conservation Department since 1937, and for the past several years she has been with the Division of Education and Publicity in the Department serving as receptionist at the Conservation Department's museum.

Funeral services were held the afternoon of January 20th.

Mrs. Simpson, before her marriage. was a Miss Pichet. member of a pioneer family of the state. Governor Simpson preceded her in death on November 17, 1932.

WHOSE GAME?

With the advent of another hunting season a brief review of the question of the ownership of game is in order. In America, the ownership of wild game is universally vested in the State, in trust for the use of its citizens under such rules and regulations as the sovereign state may set up through its regularly constituted agencies—State Game and Fish Commissions, in most of our states. The courts agree that game does not become the property of any individual until it has been reduced to "possession" under legal circumstances.

HOME CURING OF FISH

Smoking, salting and other methods of curing fish at home are described at length in a new 26-page leaflet recently issued by the Fish and Wildlife Service, U. S. Department of the Interior, Merchandise Mart Building, Chicago, Ill.

"Canning is not the only method of home preservation of fishery products," says Norman D. Jarvis, Service technologist and author of the leaflet, "they may be corned, brine cured, dried, dry salted, smoked or pickled."

American Musk Used for Perfume From Muskrats

(Continued from Page 6)

This world-renowned chemist not only established the chemical structure of the odoriferous substances responsible for the odors of the principal natural animal fixatives, musk and civet; he was also the first to synthesize compounds of this character[7].

This he did by first producing long chain dicarboxylic acids the acid groups of which were located at the extreme ends of the molecules. Then he produced the salts of these acids in which the metal component was thorium, calcium, strontium, barium, or related elements. When these salts were subjected to dry distillation, the acid molecules cyclized to form the volatile-macrocyclic ketones, while the metal oxide or carbonate remained behind.

Ruzicka's pyrolysis of dicarboxylic acid salts was an extension of a procedure first undertaken in 1836 by the French chemist Boussingaut who dry-distilled the calcium salt of suberic acid, $(CH_2)_6$. $(COOH)_2$. He obtained a product which he called suberone, but it was not until 57 years later that two German chemists, repeating the experiment, obtained the compound and found its structure to be that of cycloheptanone.

This is where Ruzicka and coworkers picked up the trail and worked with the calcium salts of longer dicarboxylic acids. Going up the scale systematically and trying a whole series of these acids, they found that they often obtained far better yields of cyclic ketones from the thorium salts than from the calcium salts. Eventually, they worked up their way to the very large cyclic (macrocyclic) ketones of the musk type.

That ring compounds of such enormous size could exist at all was a fact which it took chemists some time to assimilate. The most common ring compounds have only five or six atoms. Cyclic compounds with three, four, seven and eight carbon atoms are also known. Cyclopropane, which has three carbons in a ring, is an example of a well known cyclic compound departing from the orthodox 5 or 6 carbon pattern.

The Baeyer strain theory was created to explain nature's predilection for compounds with five or six atoms in a ring.

According to all the rules, products like civetone or muscone should be extremely unstable because, according to the Baeyer theory, they were subjected to strain that would take only baby's breath to cause them t explode into minute fragments In their own stubborn way, th cyclic musks proved to be a stable as could be. The happy explanation offered was that, b virtue of its very length, the rin of such a musk molecule was abl to twist itself into a position i which there was little or no distortion of the carbon bonds, an hence no strain.

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Henry Ford once said, "Th land supports life. Industry help man to make the land suppor him. When industry ceases to d that and supplants the land, an the land is forgotten and ma turns to the machine for sustenance, we discover that we do no live off the work of our hands bu off the fruits of the land."

That was the jolting discover made by many of us after th World War . . . that there was after all, only one source o wealth, the natural resources o a nation . . . its soil, vegetation minerals, water and wild-life However much technical progres we might have made, howeve many machines we had invented they were useless in a land denuded of its life-giving soil an waters.

We had made America the mos productive nation the world ha ever known, but we had consume our resource **capital** in doing it We forgot that Mother Natur keeps a set of books, and balance these books with judicious accuracy and detachment. We opene the ledger to our page and foun every mistake of the past recorde there.

We had slashed our forest lands Nature balanced this transactio with floods, drought and gullie lands.

We drained the marsh land where water-fowl feed and breed We're reclaiming these lands wit special tax monies today.